Write your name here

Surname	Other names

Edexcel
Functional Skills

Centre Number | | | | | |

Candidate Number | | | | |

Mathematics

Level 2

7–11 January 2013
Time: 1 hour 30 minutes

Paper Reference
FSM02/01

You must have:
Pen, calculator, HB pencil, eraser, ruler graduated in cm and mm, protractor, compasses.

Total Marks

My signature confirms that I will not discuss the content of the test with anyone until the end of the 5 day test window.

Signature: _____

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Sign the declaration.
- Answer **all** questions.
- Answer the questions in the spaces provided
  – there may be more space than you need.
- **Calculators may be used.**

Information

- The total mark for this paper is 48.
- The marks for **each** question are shown in brackets
  – use this as a guide as to how much time to spend on each question.
- **Where you see this sign you must show clearly how you get your answers because marks will be awarded for your working out.**
- **Check your working and your answers at each stage.**

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.

Turn over ▶

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P 4 2 3 9 1 A 0 1 2 0

PEARSON

SECTION A: Guinea pigs

Answer all questions in this section.

Write your answers in the spaces provided.

1 John is a foster parent.
He fosters three children.

John wants to buy them some guinea pigs.
He sees this sign at a pet shop.

For Sale
Guinea pigs £14.60 each

Special Offer
Buy 2 guinea pigs and get the third at $\frac{1}{2}$ price

John wants to buy 3 guinea pigs.

(a) How much should John pay for the 3 guinea pigs?

(2)

Use the box below to show clearly how you get your answer.

John sees these prices at the pet shop.

Hutches		**Food**		**Bedding**	
Ace Hutch	£59.95	Mega Mix food	£10.95	Straw	£2.95
Basic Hutch	£44.95	Budget food	£7.95	Sawdust	£5.95

John needs

- one hutch
- one bag of food
- one bag of straw
- one bag of sawdust.

He has a voucher that gives him 25% off the price of any hutch.

John has £60 to buy these things.

(b) Is £60 enough to buy these things?

(3)

Use the box below to show clearly how you get your answer.

(Total for Question 1 is 5 marks)

2 John wants to have a space in the garden for the guinea pigs to play.

He is going to use 10 m of fencing.

The play space must

- be rectangular
- have a width of 2 m

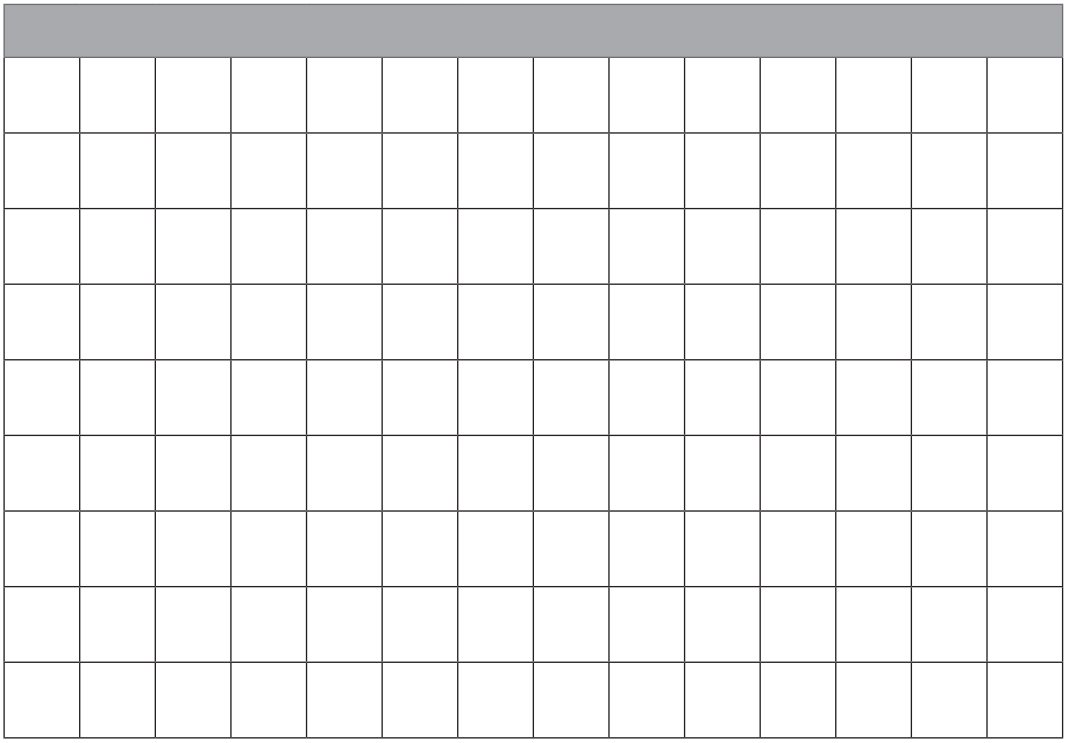
John can use the garden wall for one side of the play space.

He draws a scale plan of the garden on a grid.

The diagram below shows the plan of the garden.

(a) Show the play space on the plan.

(2)



Key: 1 cm on the grid is 50 cm in the garden.

Garden wall

John has a 2.5 kg bag of guinea pig food.
He thinks that one guinea pig eats between 35 g and 55 g of food each day.

John has 3 guinea pigs.

He thinks the bag of guinea pig food will last at least two weeks.

(b) Is John correct?
Show why you think this.

(4)

Use the box below to show clearly how you get your answer.

(Total for Question 2 is 6 marks)

3 The three children John fosters are Liam, Sean and Rosie.

He wants them to look after the guinea pigs.

John gives points for these tasks.

Task	Description	Points	When it must be done
A	give the guinea pigs carrots	1	every morning
B	give the guinea pigs food, straw and water	3	every evening
C	clean the hutch	5	Sunday morning

Liam has rugby club on Wednesday evening.
Sean has homework club on Monday evening.
Sean has swimming club on Sunday morning.
Rosie has football club on Tuesday evening.

John wants a rota to share the tasks so that

- each child gets the same number of points
- no child does a task when they have a club.

Make a rota for one week.
Show clearly how many points each child gets.
Remember to check your answer. **(5)**

Use the box below to show your working and your answer.

(Total for Question 3 is 5 marks)

SECTION B: The farm

Answer all questions in this section.

Write your answers in the spaces provided.

4 Pete is a farmer.
He wants to use a field for a campsite.

The field has an area of 6 acres.
He is going to use $\frac{2}{3}$ of the field for tents.

He uses this method to work out how many tents he could have.

- Find $\frac{2}{3}$ of the area of the field (in acres)
- Then multiply by 45

Pete thinks he has enough space for 200 tents.

(a) Is Pete correct?

(3)

Use the box below to show clearly how you get your answer.

Pete needs to grow grass on this field.

He uses this information.

- The area of the field is 6 acres
- 1 acre is 4047 m^2
- One 20 kg bag of grass seed covers 800 m^2
- Each bag of grass seed costs £95

Pete has £3500 to buy grass seed for the field.

(b) Does Pete have enough money to buy the grass seed?

(4)

Use the box below to show clearly how you get your answer.

(Total for Question 4 is 7 marks)

5 Pete wants to borrow some money from the bank.

He needs to show the bank manager how his farming business is doing.

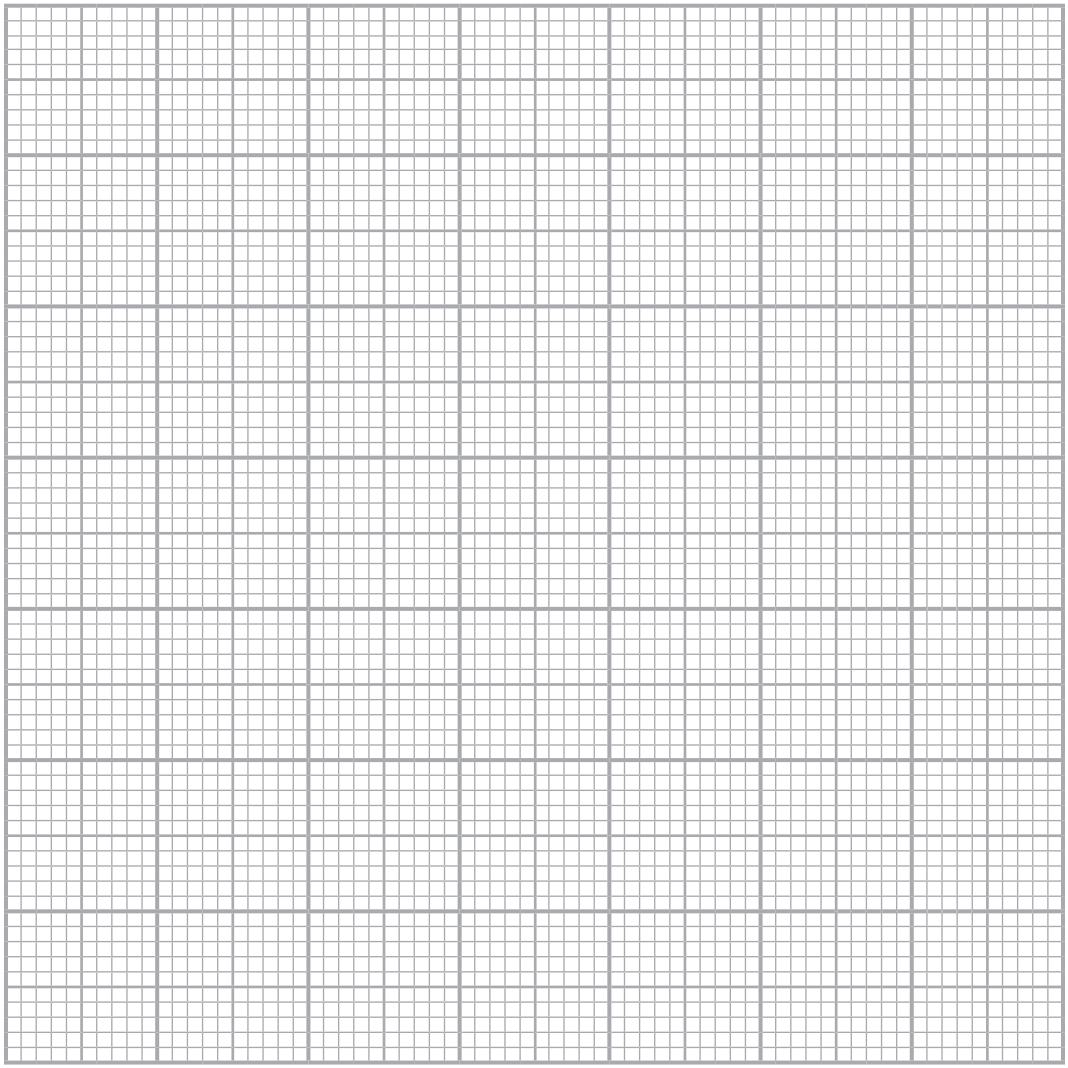
Pete shows the bank manager this information about his profits from dairy and live stock.

Profit (£)	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Dairy	3200	3250	3600	3850
Live stock	1650	1900	2100	2200

He wants to display the information on a graph or chart.

Draw a graph or chart for Pete.

(3)



(Total for Question 5 is 3 marks)

6 Dave is a milk tanker driver.
He collects milk from farms.

At 9:35 am he arrives at Pete's farm.

Dave has to wait until the temperature of the milk is 5˚C or below.
The temperature of Pete's milk is 9˚C at 9:35 am.
The milk cools at a rate of 1˚C every 10 minutes.

Then Dave pumps the milk into the tanker at 20 000 litres per hour.
Dave has to collect 2500 litres of milk from Pete's farm.

Dave usually takes an extra 5 to 10 minutes to pack up at the end.

He wants to leave Pete's farm by 10:45 am.

Will Dave be ready to leave Pete's farm at 10:45 am?
Show how you have checked your answer. **(6)**

Use the box below to show clearly how you get your answer.

(Total for Question 6 is 6 marks)

SECTION C: Heating

Answer all questions in this section.

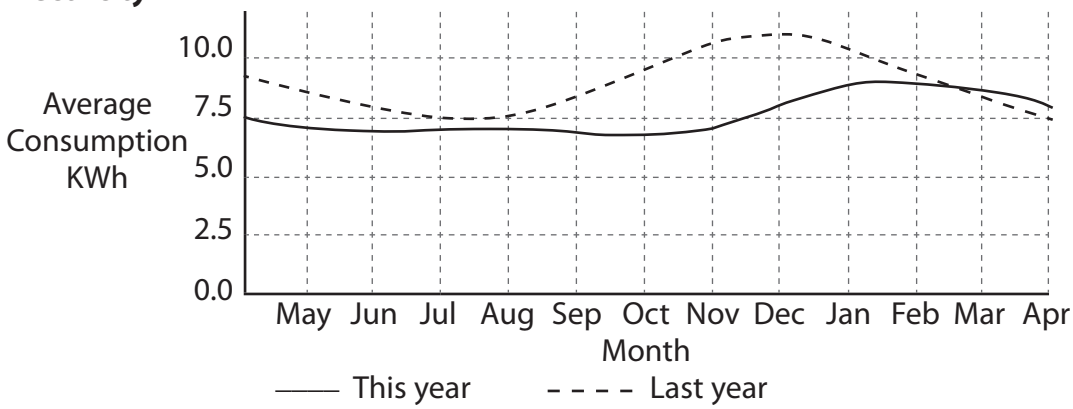
Write your answers in the spaces provided.

7 Meena wants to save money on her heating costs.

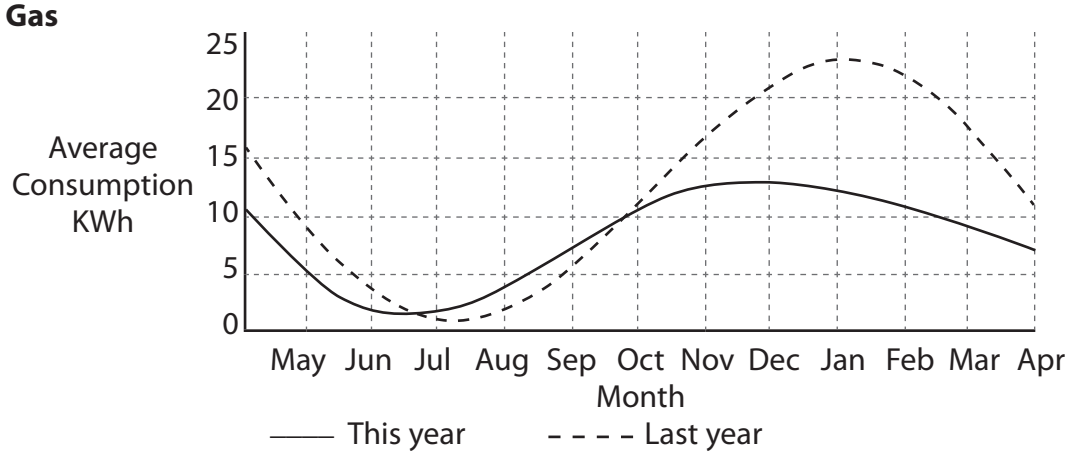
She finds these graphs from her energy company's website.

The graphs show how much gas and electricity Meena used this year and last year.

Electricity



Gas



(a) Write comments to compare Meena's use of gas and electricity this year and last year. **(2)**

Write your comments in the box below.

Meena wants to sell her old fireplace.
She is going to put an advert in the local paper.

The paper uses this formula to work out how much to charge for an advert.

$$\mathbf{C} = \mathbf{n}(0.45\mathbf{w} + 1.25)$$

C is the total cost in pounds
w is the number of words in the advert
n is the number of times the advert is in the paper

Meena wants to use this advert to sell her fireplace.

Fireplace for sale in excellent condition.
Original marble, £250
Viewing essential, buyer collects.
Phone 456789

(b) What is the total cost to put the advert in the paper twice?

(3)

Use the box below to show clearly how you get your answer.

(Total for Question 7 is 5 marks)

8 Meena wants to replace the radiator in her kitchen.

A heating engineer tells her she needs to calculate the volume of the kitchen in cubic feet.

He gives Meena these instructions.

- Find the area of your kitchen floor
- Multiply the area by the height of the kitchen walls to find the volume
- To convert the volume, use 1 m^3 = 36 cubic feet

Here is a plan of the kitchen floor.

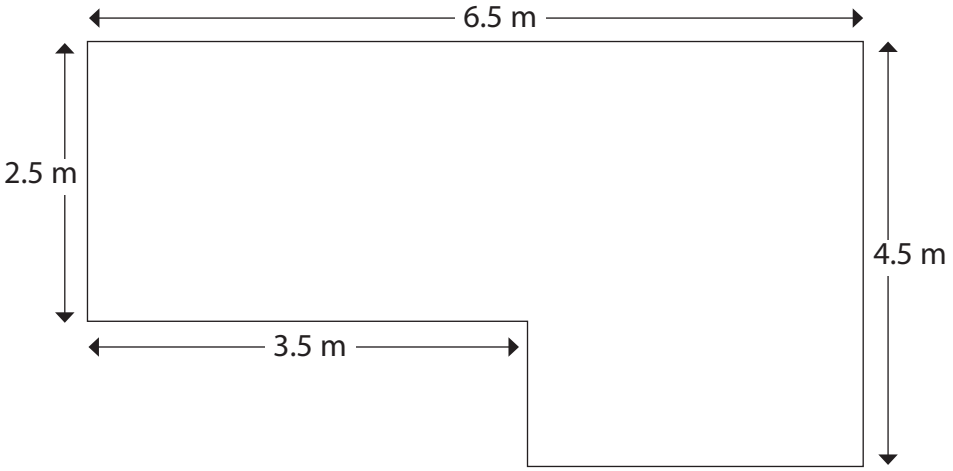


Diagram **NOT** accurately drawn

The height of the kitchen walls is 2.8 m

Find the volume of Meena's kitchen in cubic feet.

(6)

Use the box below to show clearly how you get your answer.

(Total for Question 8 is 6 marks)

9 Meena also needs new radiators in her living room.
She finds this information about radiators.

Heat output from a radiator is measured in BTU (British Thermal Units)

Number of BTU needed = Volume of room in cubic feet × 3

She finds these prices.

Radiator	**Maximum output (BTU)**	**Price (£)**
Small convector	1148	25
Medium convector	1837	29
Large convector	2297	36
X Large convector	3216	51
Super convector	4594	89

Meena works out that the volume of her living room is 1530 cubic feet.

Meena wants to spend as little as possible on radiators for her living room.
She needs to be sure that the total output is enough for the living room.

(a) Which radiators should Meena buy for her living room?

(3)

Use the box below to show clearly how you get your answer.

Meena buys new radiators for all of her house.

The total cost is £370

The store gives her a discount of $17\frac{1}{2}\%$

(b) How much does Meena pay for the radiators?

(2)

Use the box below to show clearly how you get your answer.

(Total for Question 9 is 5 marks)

TOTAL FOR THE PAPER IS 48 MARKS

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